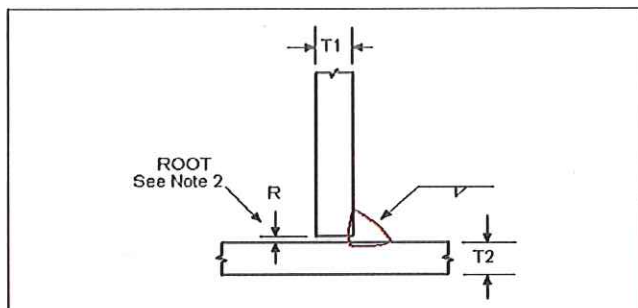


Weld Procedure No. S50W-2F-GM

Supporting PQR Material Specification: Welding Process: Position of Weld: Filler Metal: Flux: Shielding Gas: Welding Current: Preheat and Interpass temperatures: Root Treatment: Post Weld Heat Treatment Heat Input Range:	PQR ORTHO-1G-DCEN A709-36,50,50S,50W SAW, Automatic (Girder Maker) Horizontal (2F) AWS A5.17, ESAB Spoolarc 81 ESAB OK10.71; F7A5-EM12K-H8 None DCEN, CV See notes below Clean to remove contaminants None Minimum: 45.2 KJ/in Maximum 62.1 KJ/in
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T1 = Unlimited
 T2 = Unlimited
 R = 0 - 3/16

 Maximum weld size 5/16"

Pass No.	Weld Type	Position	Electrode	Welding Current		Travel Speed
				Volts	Amps	
All	Fillet	Horizontal (2F)	Spoolarc 81 1/8" Dia	33.5-35.5	585-700	24 - 26 IPM

Process Requirements

1. Electrode extension 1 1/4" to 1 3/4"
2. If the root separation is greater than 1/16" the size of the weld shall be increased by the amount of the gap not to exceed 3/16"
3. Interpass cleaning by wire brush, chipping and grinding as needed.
4. Maximum interpass temperature is 450°F.
5. This procedure may vary due to fabrication sequence, fit-up, pass size, etc. within the limitation of all mandatory variables given in AWS D1.5: Bridge Welding Code..

MINIMUM PREHEAT REQUIREMENTS

MATERIAL	FCM	TO 3/4" INCL.	3/4" TO 1 1/2" INCL.	1 1/2" TO 2 1/2" INCL.	OVER 2 1/2"
A709-36,50,50S,50W	NO	50°F	70°F	150°F	225°F
A709-36,50,50S	YES	100°F	150°F	200°F	300°F
A709-50W	YES	100°F	200°F	300°F	350°F

VTrans
 Received
 CK'D _____ OK'd BY JWC

FEB 06 2014

Resubmit _____ APPROVED ✓
 BY _____ DATE 2/24/14

Revision History

Rev. No.	Date	Description	Approved by	CWI No.
0	1/31/2014	Issue for Use	Raymond Shortsleeve	08041601

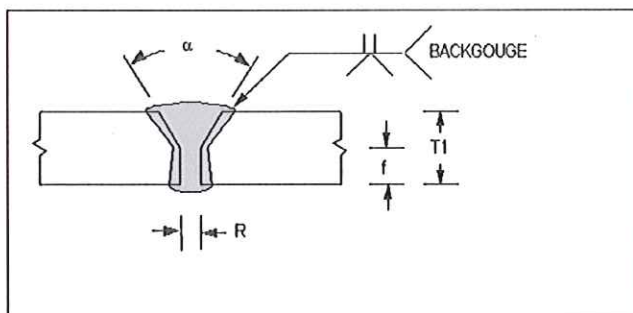
Supporting PQR
 Material Specification: CK'D
 Welding Process: SAW
 Position of Weld: Flat (1G)
 Filler Metal: AWS A5.23, Lincolnweld LA-75
 Flux: Lincolnweld 960; F8A2-ENi1K-Ni1-H8
 Shielding Gas: None
 Welding Current: DCEP, CV
 Preheat and Interpass temperatures: See notes below
 Root Treatment: Clean to remove contaminants
 Post Weld Heat Treatment: None
 Heat Input Range: Minimum: 69.6 KJ/in Maximum: 92.6 KJ/in

Vtrans
 Received
 OK'd BY Jwc

FEB 06 2014

Resubmit
 BY DATE
2/24/14

Joint Geometry B-L2c-S



R = 0" to 1/16" a = 55° to 70°

T1	f - Face
1/2" to 1"	1/4" Min.
Over 1" to 1 1/2"	3/8" Min.
Over 1 1/2" to 2"	1/2" Min.
Over 2"	Use S50W-1G-2

Pass No.	Weld Type	Position	Electrode	Welding Current		Travel Speed
				Volts	Amps	
All	Groove	Flat (1G)	LA-75 3/32" Dia.	33.5-35.5	450-500	11.5 - 13 IPM

Process Requirements

1. A weld procedure using less than 600 Amperes shall be used for any weld joining two faces.
2. The split-layer technique shall be used in making multiple pass groove welds when the width of the weld layers exceed 5/8", or when the root opening is greater than 1/2".
3. This WPS is for use on materials between 1/2" and 2" in thickness.
4. The depth of the shallower groove on double-groove welds shall be no less than 25% of the thickness of the thinner part joined.
5. Interpass cleaning by wire brush, chipping and grinding as needed.
6. Electrode extension 1" to 1 1/2"
7. Maximum interpass temperature is 450°F.
8. This procedure may vary due to fabrication sequence, fit-up, pass size, etc. within the limitation of all mandatory variables given in AWS D1.5: Bridge Welding Code.

MINIMUM PREHEAT REQUIREMENTS

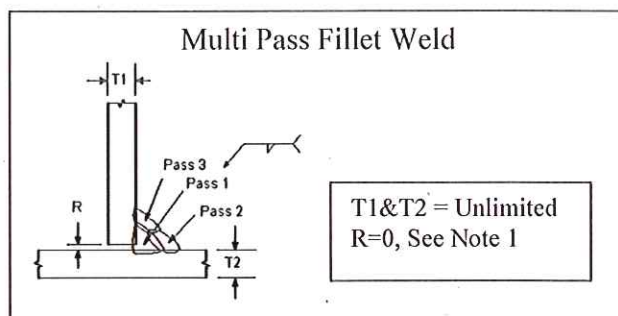
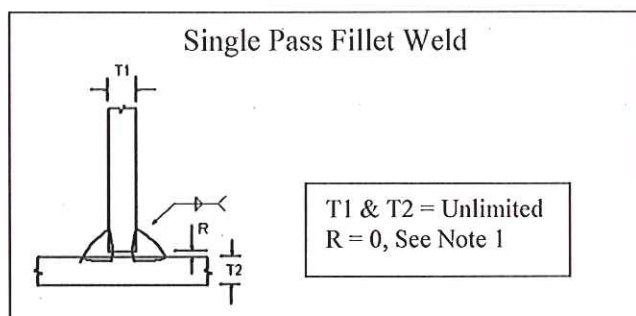
MATERIAL	FCM	TO 3/4" INCL.	3/4" TO 1 1/2" INCL.	1 1/2" TO 2 1/2" INCL.	OVER 2 1/2"
A709-36,50,50S,50W	NO	50°F	70°F	150°F	225°F
A709-36,50,50S	YES	100°F	150°F	200°F	300°F
A709-50W	YES	100°F	200°F	300°F	350°F

Revision History

Rev. No.	Date	Description	Approved by	CWI No.
0	1/31/2014	Issue for Use	Raymond Shortsleeve	08041601

Weld Procedure No. F50W-F

<p>Supporting PQR Material Specification: CK'D Vtrans Received Welding Process: OK'd BY JWC Position of Weld: FEB 06 2014 Filler Metal: Flux: Shielding Gas: Resubmit APPROVED DATE 2/24/14 Welding Current: Preheat and Interpass temperatures: Root Treatment: Post Weld Heat Treatment Heat Input Range:</p>	<p>PQR-810XNi13G A709-36,50,50S,50W FCAW, Semi-automatic Vertical (3F) AWS A5.29, ESAB Dual Shield, 810X-Ni1 N/A 100% CO² DCEP, CV See notes below, Max Interpass shall be 450°F Clean to remove contaminants None Minimum: 42.9 KJ/in Maximum 57.8 KJ/in</p>
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Pass No.	Weld Type	Position	Electrode	Welding Current		Travel Speed
				Volts	Amps	
All	Fillet	Vertical (3F)	810X 1/16" Dia	25-26.25	200-220	6-7 IPM

Process Requirements

1. If the root separation is greater than 1/16" then the size of the fillet weld shall be increased by the amount of the gap to a maximum of 3/16".
2. Progression of welding shall be upwards.
3. Interpass cleaning by wire brush and chipping as needed.
4. Electrode extension 3/4 to 1" inch.
5. Maximum interpass temperature is 450°F.
6. This procedure may vary due to fabrication sequence, fit-up, pass size, etc. within the limitation of all mandatory variables given in AWS D1.5: Bridge Welding Code.

MINIMUM PREHEAT REQUIREMENTS

MATERIAL	FCM	TO 3/4" INCL.	3/4" TO 1 1/2" INCL.	1 1/2" TO 2 1/2" INCL.	OVER 2 1/2"
A709-36,50,50S,50W	NO	50°F	70°F	150°F	225°F
A709-36,50,50S	YES	100°F	150°F	200°F	300°F
A709-50W	YES	100°F	200°F	300°F	350°F

Revision History

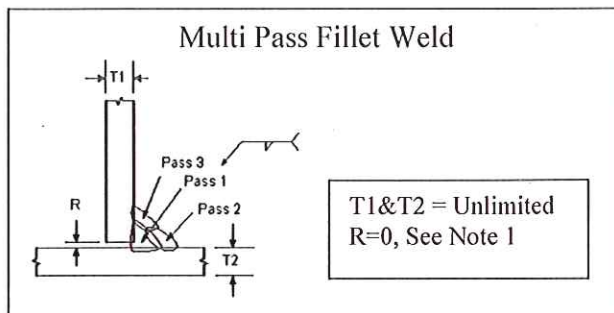
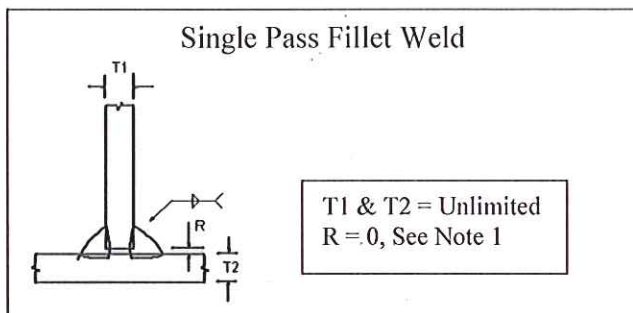
Rev. No.	Date	Description	Approved by	CWI No.
0	1/31/2014	For Use	Raymond Shortsleeve	08041601

Weld Procedure No. F50W-F1

Supporting PQR CK'D Material Specification: Welding Process: VTrans Position of Weld: Received Filler Metal: OK'd BY JWC Flux: Shielding Gas: Resubmit Welding Current: BY Preheat and Interpass temperatures: Root Treatment: Post Weld Heat Treatment Heat Input Range:	PQR-810XNi13G A709-36,50,50S,50W, HPS 50W FCAW, Semi-automatic Vertical (3F) AWS A5.29, ESAB Dual Shield, 810X-Ni1 N/A 100% CO ₂ , 41-56 CFH DCEP, CV See notes below, Max Interpass shall be 450°F Clean to remove contaminants None Minimum: 42.9 KJ/in - Maximum 57.8 KJ/in
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FEB 06 2014

2/24/14



Pass No.	Weld Type	Position	Electrode	Welding Current		Travel Speed
				Volts	Amps	
All	Fillet	Vertical (3F)	810X 1/16" Dia	25-26.25	200-220	6-7 IPM

Process Requirements

1. If the root separation is greater than 1/16" then the size of the fillet weld shall be increased by the amount of the gap to a maximum of 3/16".
2. Progression of welding shall be upwards.
3. Interpass cleaning by wire brush and chipping as needed.
4. Electrode extension 3/4 to 1" inch.
5. Maximum interpass temperature is 450°F.
6. This procedure may vary due to fabrication sequence, fit-up, pass size, etc. within the limitation of all mandatory variables given in AWS D1.5: Bridge Welding Code.

MINIMUM PREHEAT REQUIREMENTS

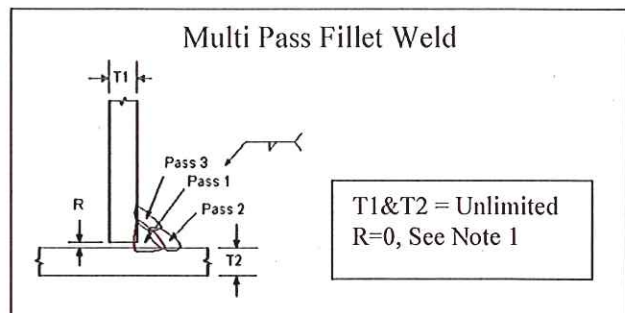
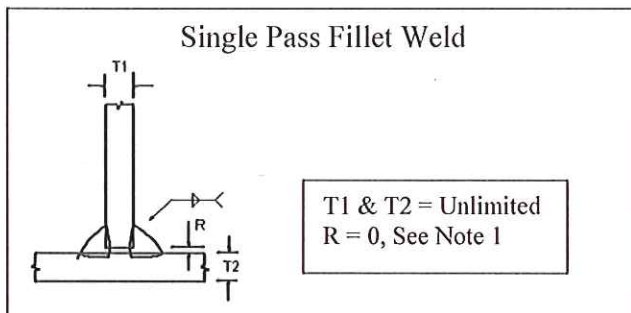
MATERIAL	FCM	TO 3/4" INCL.	3/4" TO 1 1/2" INCL.	1 1/2" TO 2 1/2" INCL.	OVER 2 1/2"
A709-36,50,50S, 50W, HPS50W	NO	50°F	70°F	150°F	225°F
A709-36,50,50S	YES	150°F	200°F	225°F	325°F
A709-50W, HPS50W	YES	150°F	250°F	325°F	350°F

Revision History

Rev. No.	Date	Description	Approved by	CWI No.
0	1/31/2014	Issue for use	Raymond Shortsleeve	08041601

Weld Procedure No. F50W-F-2

Supporting PQR Material Specification: CK'D Welding Process: Position of Weld: FEB 06 2014 Filler Metal: Flux: Shielding Gas: Resubmit Welding Current: BY APPROVED 2/24/14 Preheat and Interpass temperatures: Root Treatment: Post Weld Heat Treatment Heat Input Range:	VTrans Received OK'd BY JWC PQR-810XNi1-1G A709-36,50,50S,50W, HPS 50W FCAW, Semi-automatic Flat or Horizontal AWS A5.29, ESAB Dual Shield, 810X-Ni1 N/A 100% CO ₂ , 41-56 CFH DCEP, CV See notes below, Max Interpass shall be 450°F Clean to remove contaminants None Minimum: 31.3 KJ/in Maximum 43.5 KJ/in
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Pass No.	Weld Type	Position	Electrode	Welding Current		Travel Speed
				Volts	Amps	
All	Fillet	Flat or Horizontal	810X 1/16" Dia	27-29	290-325	13-15

Process Requirements

1. If the root separation is greater than 1/16" then the size of the fillet weld shall be increased by the amount of the gap to a maximum of 3/16".
2. Interpass cleaning by wire brush and chipping as needed.
3. Electrode extension 3/4 to 1" inch.
4. Maximum interpass temperature is 450°F.
5. This procedure may vary due to fabrication sequence, fit-up, pass size, etc. within the limitation of all mandatory variables given in AWS D1.5: Bridge Welding Code.

MINIMUM PREHEAT REQUIREMENTS

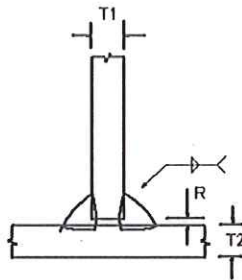
MATERIAL	FCM	TO 3/4" INCL.	3/4" TO 1 1/2" INCL.	1 1/2" TO 2 1/2" INCL.	OVER 2 1/2"
A709-36,50,50S,50W, HPS 50W	NO	50°F	70°F	150°F	225°F
A709-36,50,50S	YES	150°F	200°F	225°F	325°F
A709-50W, HPS 50W	YES	150°F	200°F	300°F	350°F

Revision History

Rev. No.	Date	Description	Approved by	CWI No.
0	1/31/2014	Issue for Use	Raymond Shortsleeve	08041601

Weld Procedure No. S50W-2F-DART

Supporting PQR Material Specification: CK'D Welding Process: Position of Weld: Vtrans Received OK'd BY JWC Filler Metal: Flux: Shielding Gas: Resubmit BY Welding Current: APPROVED DATE 2/24/14 Preheat and Interpass temperatures: Root Treatment: Post Weld Heat Treatment Heat Input Range:	PQR LA-75-960-1G-M-M-H A709-36,50,50S,50W SAW, Automatic Horizontal (2F) AWS A5.23, Lincolnweld LA-75 Lincolnweld 960; F8A2-ENi1-H8 None DCEP, CV See notes below, Max Interpass shall be 450°F Clean to remove contaminants None Minimum: 69.6 KJ/in Maximum 92.6 KJ/in
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T1 = Unlimited
 T2 = Unlimited
 R = 0 - 3/16
 If the root opening exceeds 1/16" the weld size shall be increased by the amount of the root opening.

The maximum weld size shall be 5/16" or 8mm.

Pass No.	Weld Type	Position	Electrode	Welding Current		Travel Speed
				Volts	Amps	
All	Fillet	Horizontal (2F)	LA-75 3/32" Dia.	33.5-35.5	450-500	11.5 - 13 IPM

Process Requirements

1. This procedure is for simultaneously welding both sides of a stiffener to the web using a machine welder (DART).
2. Interpass cleaning by wire brush, chipping and grinding as needed.
3. Electrode extension 1" to 1 1/2"
4. Maximum interpass temperature is 450°F.
5. This procedure may vary due to fabrication sequence, fit-up, pass size, etc. within the limitation of all mandatory variables given in AWS D1.5: Bridge Welding Code.

MINIMUM PREHEAT REQUIREMENTS

MATERIAL	FCM	TO 3/4" INCL.	3/4" TO 1 1/2" INCL.	1 1/2" TO 2 1/2" INCL.	OVER 2 1/2"
A709-36,50,50S,50W	NO	50°F	70°F	150°F	225°F
A709-36,50,50S	YES	100°F	150°F	200°F	300°F
A709-50W	YES	100°F	200°F	300°F	350°F

Revision History

Rev. No.	Date	Description	Approved by	CWI No.
0	1/31/2014	Issue for Use	Raymond Shortsleeve	08041601